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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/407,278	09/29/1999	DWIGHT L. ENGWALL	96-234C	2554

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EXAMINER	
STAICOVICI, STEFAN	
ART UNIT	PAPER NUMBER
1732	7

DATE MAILED: 01/31/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/407,278	Applicant(s) ENGWALL ET AL.	
	Examiner Stefan Staicovici	Art Unit 1732	

-- The MAILING DATE of this communication appears n the cover sheet with th correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 January 2002* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *17,18,28,29 and 32-35* is/are pending in the application.

4a) Of the above claim(s) *29 and 32-35* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *17,18 and 28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *29 September 1999* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *3* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of Group I, claims 17-18 and 28 in Paper No. 6 is acknowledged. The traversal is on the ground(s) that:

(a) the product of Group II is manufactured using the process of Group I.

This is not found persuasive because "even though product-by-process claims are limited and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process" (*In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). See MPEP §2113. The product itself can be made by another and materially different process as indicated in the previous Office Action.

(b) the search and examination of the entire application can be made without serious burden.

In response, the Applicants' argument is not found persuasive because the Examiner has shown in Paper No. 5, mailed September 19, 2001, that the claims in the instant application are drawn to distinct inventions, specifically a composite molding method, classified in class 264, subclass 510 and a composite component, classified in class 428, subclass 297.4. Therefore, because these inventions are distinct, a serious burden is placed on the Examiner in searching the entire application since the claimed distinct inventions have acquired a separate status in the art and as such would require a complex search in different classes. Further, it should be noted that

Applicants' argument that "the art has already been searched extensively for prosecution of the parent application" is not found persuasive because the parent application was drawn to a process of manufacturing a hybrid lay-up tool, classified in class 409, subclass 132 and not a composite component classified in class 428, subclass 297.4.

Since the Applicants have elected Group I, claims 17-18 and 28 are pending in the instant application. Claims 29 and 32-35 have been withdrawn from further consideration as drawn to a non-elected invention.

The requirement is still deemed proper and is therefore made FINAL.

Specification

2. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

Correction is required. See MPEP § 608.01(b).

3. The disclosure is objected to because of the following informalities:

- on page 1, line 21, after "core", "." should be replaced with --,--

- on page 4, line 2, after "business.", "the" should be replaced with --The--

- page 10 should be replaced in its entirety because it is incomprehensible

Appropriate correction is required.

Drawings

4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: "35" and "37" (page 9, line 5). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Double Patenting

5. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

6. Claims 17-18 and 28 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-25 of U.S. Patent No. 5,746,553 in view of Carver *et al* (US Patent No. 4,937,768).

Claims 1 and 9 of U.S. Patent No. 5,746,553 teach the basic claimed process for manufacturing a composite part on a hybrid tool including, providing a hybrid tool having a support structure and a tool body with a facing surface configured to a desired shape of one surface of the composite part to be made, laying up a plurality of resin impregnated skins onto said tool body, applying a vacuum bag over said lay-up and sealing peripheral regions of said vacuum bag around said laid-up assembly, evacuating air from under said vacuum bag to cause air pressure outside said vacuum bag to press said vacuum bag against said laid-up assembly and bonding/curing said resin to from said composite part. Further, claims 1 and 9 of U.S. Patent No. 5,746,553 teach removing said vacuum bag, uncovering said molded composite part, fixing said hybrid tool and molded composite part in a known position on a CNC machine tool bed using provided location and attachment devices for accurately indexing and positioning the hybrid tool on the base of the CNC machine tool and loading a data set having digital definition of the resulting composite part into a controller for controlling a machining operation. Further, claim 10 of U.S. Patent No. 5,746,553 teaches that the hybrid tool is probed with a probe mounted on the CNC machine tool in order to establish actual positions of at least three reference positions on the hybrid tool and further, that the machine control program is then normalized with actual position of reference points to update data regarding the position of the hybrid tool on the CNC machine bed based on the coordinates of the location devices. Furthermore, claim 9 of U.S.

Patent No. 5,746,553 teaches guiding the cutter of the machine tool on a predetermined path around the composite part, said cutter cutting below the surface of the tool (engages the full thickness of said lay-up part on said hybrid tool face sheet) and cutting a peripheral edge around the molded composite part. It should be noted that since claims 9 and of 10 of U.S. Patent No. 5,746,553 teach that the orientation and alignment of the hybrid tool is known in relation to the machine bed, then it is submitted that the orientation and alignment of the tool body, which is the top surface of the hybrid tool, is also known in relation to the machine bed. Although claims 1-25 of U.S. Patent No. 5,746,553 do not teach applying a release coating to the tool body surface, the use of a release coating is well known in the art. Therefore, it would have been obvious for one of ordinary skill in the art to have provided a release coating in the process of U.S. Patent No. 5,746,553 due to a variety of advantages that such a coating provides such as allowing the resulting molded composite part to be easily removed, hence reducing production costs and waste.

Regarding claim 17, claims 1-25 of U.S. Patent No. 5,746,553 do not teach that a master mold is used to form the tool body. Carver *et al.* ('768) teach the use of a master mold to form a graphite/epoxy bond tool which in turn is used to form composite parts (col. 6, lines 34-50). Therefore, it would have been obvious for one of ordinary skill in the art to have provided a master mold to form a graphite/epoxy bond tool as taught by Carver *et al.* ('768) in the process of U.S. Patent No. 5,746,553 because, Carver *et al.* ('768) specifically teach that a master mold can be used to form a graphite/epoxy bond tool, whereas U.S. Patent No. 5,746,553 teaches the

use of a graphite/epoxy bond tool in molding a composite part, and also because both references teach similar materials and bonding processes.

In regard to claim 18, claims 1-25 of U.S. Patent No. 5,746,553 do not teach a graphite/bismaleimide tool body. However, Carver *et al.* ('768) teach graphite/epoxy (graphite/bismaleimide) bond tool. Therefore, it would have been obvious for one of ordinary skill in the art to have provided a graphite/epoxy bond tool as taught by Carver *et al.* ('768) in the process of U.S. Patent No. 5,746,553 because, Carver *et al.* ('768) specifically teach a graphite/epoxy bond tool to mold a composite part, whereas U.S. Patent No. 5,746,553 teaches the use of a bond tool in molding a composite part, and also because both references teach similar materials and bonding processes.

Specifically regarding claim 28, claim 6 of U.S. Patent No. 5,746,553 teaches a sine key. Further, Engwall ('553) teaches a set point having accurately positioned pins (spud).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 17-18 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Engwall (US Patent No. 5,746,553) in view of Carver *et al.* (US Patent No. 4,937,7687).

Engwall ('553) teaches the claimed process for manufacturing a composite part on a hybrid tool including providing a hybrid tool (30) having a top plate (32) (face sheet) with top mold surface (60) configured to a desired shape of one surface of the resulting composite part (said face sheet...having a mold surface the same shape and size as a surface of the part) (col. 4, lines 49-52), applying a release coating to said top surface (60) (col. 4, lines 34-35), laying up a plurality of resin impregnated plies onto said top surface (60) of top plate (32) to form a laid-up assembly, applying a vacuum bag over said laid-up assembly and sealing peripheral regions of said vacuum bag around said laid-up assembly, evacuating air from under said vacuum bag to cause air pressure outside said vacuum bag to press said vacuum bag against said laid-up assembly and bonding/curing said resin to from said composite part (col. 6, lines 33-65). Further, Engwall ('553) teaches removing said vacuum bag, uncovering said molded composite part, fixing said hybrid tool and molded composite part in a known position on a CNC machine tool bed (42) using provided location and attachment devices for accurately indexing and positioning tool (30) on the base 42 of the CNC machine tool. Further, Engwall ('553) teaches that retractable feet (94) on the support structure (34) of the tool (30) are retracted to engage a datum surface (96) on the underside of the support structure (34) with the machine tool bed (42), hence establishing the vertical position of the facing surface (60) of the tool (30) from the machine bed (42), which is a distance "known" to the machine program that controls the movement of the CNC mounted machine tool (44) (col. 7, lines 1-13) (probing reference features on said hybrid tool to accurately establish the position of said face sheet relative to a home position of the machine tool). It should be noted that the position and orientation of the

tool (30) on the machine bed (42) are established by location devices, including a set point (98) and a sine key (100) (col. 7, lines 13-16). Further, the position information of the machine tool (30) on the machine base (42) together with a tool configuration data set and part configuration data set are then input into the machine tool controller (46) (normalizing said machine tool part program to correspond to the actual position of the hybrid tool on the machine tool bed as determined by said probing of said hybrid tool reference features) in order to provide sufficient information to enable the machine tool controller (46) to guide the machine tool to perform the required cutting operations, including guiding a cutter around a peripheral groove (62), said cutter projecting into said peripheral groove and engaging the full thickness of said molded composite part to cut the peripheral edge (col. 3, lines 3-10). It should be noted that since Engwall ('553) specifically teaches that the orientation and alignment of the tool (30) is known in relation to the machine bed (42), then it is submitted that the orientation and alignment of the surface (60), which is the top surface of tool (30), is also known in relation to the machine bed (42).

Regarding claim 17, Engwall ('553) does not teach that a master mold having reference features thereon is used to form the top cover plate (32) (face sheet). Carver *et al.* ('768) teach the use of a fiber composite master mold to form a bond tool having trim lines, drilling patterns and surface locators (reference features) thereon (col. 5, lines 67-68). Therefore, it would have been obvious for one of ordinary skill in the art to have provided a master mold to form a bond tool (top plate (32)) as taught by Carver *et al.* ('768) in the process of Engwall ('553) because, Carver *et al.* ('768) specifically teach that a master mold can be used to form a bond tool,

whereas Engwall ('553) teaches the use of a bond tool in molding a composite part, and also because both references teach similar materials and bonding processes.

In regard to claim 18, Engwall ('553) teaches that top plate (32) (face sheet) is a carbon fiber/epoxy resin (graphite/bismaleimide) composite material (col. 3, line 64).

Specifically regarding claim 28, Engwall ('553) teaches a sine key (100). Further, Engwall ('553) teaches a set point (98) including a plate (102) having a vertical hole (104) and a pin (106) fitting into said hole (104) (spud) (col. 7, lines 15-23).

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stefan Staicovici, Ph.D. whose telephone number is (703) 305-0396. The examiner can normally be reached on Monday-Friday 8:00 AM to 5:30 PM and alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jan H. Silbaugh, can be reached at (703) 308-3829. The fax phone number for this Group is (703) 305-7718.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0661.

Stefan Staicovici, PhD

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January 25, 2002